REPORT DOCUMENTATION PAGE

Form Approved
OMB No. 0704-0188

1. AGENCY USE ONLY (Leave blank)	2. REPORT DATE	3. REPORT TYPE AND DATES COVERED
	FEBRUARY 1996	FINAL REPORT (07-95 TO 12-96)

4. TITLE AND SUBTITLE

Papanicolaou Smear Waiting Times at General Leonard Wood Army Community Hospital

5. FUNDING NUMBERS

6. AUTHOR(S)

Captain Richard E. Meaney, Jr., USA, SP

7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES)

General Leonard Wood Army Community Hospital
310 Freedom Drive
Fort Leonard Wood, MO 65473-8922

8. PERFORMING ORGANIZATION REPORT NUMBER

19a-96

9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)

US Army Medical Department Center and School
Bldg 2841 MCCS HRA US Army Baylor Program in HCA
3151 Scott Road
Fort Sam Houston, TX 78234-6135

10. SPONSORING/MONITORING

11. SUPPLEMENTARY NOTES

12a. DISTRIBUTION/AVAILABILITY STATEMENT

Approved for public release; distribution is unlimited

12b. DISTRIBUTION CODE

13. ABSTRACT *(Maximum 200 words)*

From July to December 1994, the average waiting time for a Papanicolaou (Pap) smear at General Leonard Wood Army Community Hospital was greater than 50 days. Satisfaction surveys and patient complaints revealed that beneficiaries found this waiting time to be unacceptable. A team was formed to solve the problem of excessive waiting time for Pap smears. The team's solution was to increase the number and types of providers performing Pap smears and to stage "catch-up" days on which designated providers would perform Pap smears for a significant portion of the day. Samples of 200 waiting periods were drawn from all patients seeking Pap smears during the six months before and from all patients seeking Pap smears during the six months after implementation of the solution. The effects were to reduce Pap smear waiting time to approximately nine days and to eliminate complaints about Pap smear waiting time. Results of this study may be generalized to other military hospitals for assessment of excessive waiting times for similar patient care services which are not equipment-intensive. Recommendations from this study are that the hospital administration consider scheduling Pap smears during each beneficiary's birthmonth and to establish a method of evaluation and monitoring of the entire Pap smear program, possibly as part of a Women's Health

14. SUBJECT TERMS 13, cont: Program initiative.

Papanicolaou smear, Pap smear, waiting time

15. NUMBER OF PAGES 32

16. PRICE CODE

17. SECURITY CLASSIFICATION OF REPORT	18. SECURITY CLASSIFICATION OF THIS PAGE	19. SECURITY CLASSIFICATION OF ABSTRACT	20. LIMITATION OF ABSTRACT
N/A	N/A	N/A	UL

US ARMY-BAYLOR UNIVERSITY

GRADUATE PROGRAM IN HEALTH CARE ADMINISTRATION

PAPANICOLAOU SMEAR WAITING TIMES AT GENERAL LEONARD WOOD ARMY COMMUNITY HOSPITAL

A GRADUATE MANAGEMENT PROJECT PROPOSAL SUBMITTED TO

THE RESIDENCY COMMITTEE

IN CANDIDACY FOR THE DEGREE OF

MASTERS IN HEALTH CARE ADMINISTRATION

BY

CAPTAIN RICHARD MEANEY, US ARMY

FORT LEONARD WOOD, MISSOURI

FEBRUARY 1996

ABSTRACT

From July to December 1994, the average waiting time for a Papanicolaou (Pap) smear at General Leonard Wood Army Community Hospital was greater than 50 days. Satisfaction surveys and patient complaints revealed that beneficiaries found this waiting time to be unacceptable. A team was formed to solve the problem of excessive waiting time for Pap smears. The team's solution was to increase the number and types of providers performing Pap smears and to stage "catch-up" days on which designated providers would perform Pap smears for a significant portion of the day. Samples of 200 waiting periods were drawn from all patients seeking Pap smears during the six months before and from all patients seeking Pap smears during the six months after implementation of the solution. The effects were to reduce Pap smear waiting time to approximately nine days and to eliminate complaints about Pap smear waiting time. Results of this study may be generalized to other military hospitals for assessment of excessive waiting times for similar patient care services which are not equipment-intensive. Recommendations from this study are that the hospital administration consider scheduling Pap smears during each beneficiary's birthmonth and to establish a method of evaluation and monitoring of the entire Pap smear program, possibly as part of a Women's Health Program initiative.

TABLE OF CONTENTS

LIST OF TABLES

Table

CHAPTER 1

INTRODUCTION

Conditions which Prompted the Study

From July to December 1994, the average waiting time before a patient could receive a Papanicolaou (Pap) smear at General Leonard Wood Army Community Hospital was greater than 50 days. The hospital's Patient Representative Officer received frequent complaints from beneficiaries about waiting times for Pap smears. A community assessment survey done in the fourth quarter of calendar year 1994 revealed that approximately 18% of the beneficiaries responding to the survey expressed that they were either dissatisfied or very dissatisfied with clinic waiting times at the hospital. Further, 8.9% of survey respondents expressed that they were unable to obtain required gynecological or Pap smear appointments at the hospital. Past efforts to solve the Pap smear waiting time problem failed or produced greater problems. When the waiting list for Pap smears contained over 1,000 patient names at one point in 1993, the hospital contracted with two civilian nurse practitioners to perform nothing but Pap smears for a period of two months. At the conclusion of the contract period, the waiting list grew again. Additionally, the contract had created an anomaly in that hundreds of women would

be due for their annual Pap smear again the following year during the same two months. In 1994, an additional effort to reduce the wait for Pap smear appointments also failed. The hospital leadership decided to limit Pap smear availability to only those beneficiaries who lived within the hospital's 40 mile catchment area. Not only did this decision fail to produce a reduced waiting time for Pap smears, but it also brought about numerous complaints from beneficiaries who were no longer eligible for Pap smears at General Leonard Wood Army Community Hospital. The long waiting list for Pap smears and the disproportionate demand for Pap smears during just two months of the year were high priority problems for the incoming hospital commander, who arrived in the summer of 1994. The new hospital commander believed that the waiting period for pap smears was excessive. He believed that a thorough assessment of the situation could produce useful information that could be used to help decrease Pap smear waiting times to a more acceptable level.

The increased national emphasis on women's health issues over the past five years, the concerns and complaints of General Leonard Wood Army Community Hospital beneficiaries over Pap smear waiting times, and the interest of the command prompted formation of a team whose goal was to implement solutions that would produce either acceptable waiting periods for Pap smears or no waiting periods at all. The hospital commander, the chiefs of

the Family Practice, OB/GYN, and Surgical clinics, the senior executive officer responsible for clinical services, the chief of the hospital's Pathology Division, and the head nurse of the OB/GYN Clinic comprised the primary members of the team. The team assessed the current and forecasted demand for and supply of Pap smears in order to derive possible solutions to the problem of an inadequate Pap smear supply to meet the demand in a timely manner.

The team offered two solutions that effectively "formalized" the hospital's Pap smear program. The first solution was to increase, on a permanent basis, the number of Pap smears available on physician's schedules. The second solution called for staging "Pap days" on which all designated health care providers performed almost nothing other than Pap smears (this solution included both the Commander and Deputy Commander for Clinical Services, who are Family Practice physicians, performing Pap smears until the waiting list was sufficiently reduced).

By August 1995, the average waiting time for a Pap smear had decreased to a point judged more acceptable by the command and, judging by the reduced frequency of patient complaints regarding waiting periods for Pap smears, by beneficiaries.

Research Question

The research question that will be examined is: "What were the effects of efforts applied in January 1995 in an attempt to reduce Pap smear waiting times at General Leonard Wood Army Community Hospital?"

Literature Review

The health concerns of women have gained considerable attention over the past five years (Davis 1995). Concerns over cervical cancer screening, detection, and treatment have received significant recognition by both the professional literature and the lay press. This attention is not unwarranted. In 1995, it is estimated that 65,000 new cases of non-invasive cervical cancer and 15,800 of new cases of invasive cervical cancer will be found in the United States (Wingo, Tong, and Bolden 1995). Most of these cancers will be discovered through the use of the Pap smear. The Pap smear, discovered and popularized by Dr. George Nicholas Papanicolaou, was originally devised in 1916 as a means to detect menses in guinea pigs. Papanicolaou sought to chart the menstrual cycle of guinea pigs so that fewer animals would have to be sacrificed in his research on guinea pig oocytes (Barter 1992). In 1928, Papanicolaou proclaimed that he had developed a new, easily applied, diagnostic method for malignant tumors of the female genital tract. Papanicolaou cautioned that

his work needed to be carried a little further, but additional work would likely bring additional rewards in that enhanced understanding on cancers of other organs could result (Papanicolaou 1928). Papanicolaou established the validity of the Pap smear for detection of pre-cancerous and cancerous abnormalities and published in 1941 (Papanicolaou and Traut 1941).

Since the introduction of Pap testing in 1941, numerous reports have been published concerning the Pap smear's success in reduction of mortality from cervical cancer. Prospective, randomized studies of the efficacy of the Pap smear have never been performed because of bioethical considerations given the overwhelming number of studies offering convincing, indirect evidence of the test's success (ACOG Committee 1993). The mortality rate of cervical cancer in the United States has decreased from 14 per 100,000 females in 1941 to 4 per 100,000 females (Di Saia and Creasman 1989). Age-adjusted mortality from cervical cancer declined 43% in the United States between 1974 and 1986 (Chu, Kramer, and Smart 1991). McPhee reported that death rates from cervical cancer decreased by more than 70% between 1950 and 1985 with the increasing Pap smear use in the United States (McPhee 1995). Outside of the United States, using linear models, it was estimated that for every 5,000 Pap smears performed on Canadian women in 1966, there was one less death

from cervical cancer in 1972 (Guzick 1978). In Iceland, the establishment of a comprehensive cervical screening program led to a twofold decrease in the mortality of invasive cervical cancer and a significant decrease in the incidence of advanced-stage cervical tumors (Johannesson, Geirsson, and Day 1978).

Many studies offer estimates of the potential reduction of mortality from cervical cancer possible if Pap screening were more widespread and organized. Berrino estimated that 90% of cervical cancer deaths could be avoided if women were offered and accepted a high quality cervical screening program (Berrino 1990). Miller stated that a 60% reduction in mortality from cervical cancer is possible in the United States by the year 2000 if the organizational problems of screening programs are solved (Miller 1991).

A number of studies report a primary obstacle to the successful provision of cervical screening programs is a lack of or poor organization (Gillam 1991; Miller 1991; Beral et al 1994; and Kerr 1995). Specifically, Kerr described programs in England that focused on younger, lower-risk groups as neglecting women 35 years of age or older, a group that accounts for 85% of the cases of invasive cervical cancer. Kerr also stated that a fundamental organizational problem with the cervical cancer screening program in England is that the program does not have an accurate, computerized database to enable the target population to be

identified and invited for screening and follow-up (Kerr 1995). Miller reported that organized programs have had the greatest effects, while using less resources than unorganized programs (Miller 1991). Organized cervical cancer screening programs should have the following eight essential elements: the target population has been identified; individual women are readily identifiable; measures, such as personal letters of invitation, are available to guarantee high coverage and attendance; adequate facilities for taking and examining the smears; an organized quality-control program on the performance and examination of smears; adequate facilities for diagnosis and treatment of confirmed neoplastic lesions; a well-designed referral system for management of any abnormalities found and for providing information about normal screening tests; and organized evaluation and monitoring of the total program (Hakama et al 1985).

A problem that may be common to all Pap smear programs, including the one at General Leonard Wood Army Community Hospital, is one of physician motivation to perform Pap smears. Since medical education emphasizes retrospective, rather than prospective, medicine (Ward, Gordon, and Sanson-Fisher 1991; Williams and Williams 1988), physicians usually derive personal and professional satisfaction from improving the functional status of ill patients (Griffith and Williams 1992). Therefore,

one possible problem with access to or availability of Pap smear appointments may be that Pap smears are under-represented on physician's scheduling templates simply because physicians prefer to perform procedures which are more personally and professionally rewarding.

Perhaps the most controversial aspects of any Pap smear program are the time interval recommended between successive Pap smears, the age of a woman's first Pap smear, and the age of a woman's final Pap smear. Table 1 provides a summary of various international and American professional groups' recommendations. Often, controversy stems from women's desires to have Pap smears performed more frequently than the Pap smear program or provider recommends. Adding further controversy to the issue of Pap smear intervals for military beneficiaries is the contrast between the Civilian Health and Medical Program of the Uniformed Services (CHAMPUS) rules and the proposed Region VIII TRICARE rules. CHAMPUS allows coverage for Pap smears every two years after three consecutive annual exams with normal findings and in the absence of risk factors (Federal Register 1994). Under TRICARE, Region VIII beneficiaries enrolled in the "Prime" option are entitled to annual Pap smears at age 18 (or younger, if sexually active) (Department of Defense 1995). Most women seen at General Leonard Wood Army Community Hospital are scheduled for annual Pap smears, since annual Pap smears are required in order for a woman

to receive an initial or renewed prescription for contraceptive medications.

Table 1.--Pap Smear Screening Guidelines

GROUP	RECOMMENDATIONS
American Cancer Society National Cancer Institute American College of Obstetricians and Gynecologists American Academy of Family Physicians American Medical Association	Annual Pap smears beginning at age 18 or with the onset of sexual activity; after three consecutive normal examinations, Pap smears may be performed less frequently at the discretion of the physician.
US Preventive Services Task Force	Pap smears every one to three years beginning with the onset of sexual activity; testing may be discontinued at age 65 if consistently normal.
1982 Canadian Task Force	Pap smears every one to three years beginning at age 18 or with the onset of sexual activity; screening interval may be extended to every five years at age 35 and discontinued at age 60 if consistently normal.
World Health Organization	Screen every woman once in her lifetime between the age of 35 to 40 years; if additional resources are available, screening should be once every ten years for women aged 35 to 55 years; if even more resources available, screening should be once every five years for women aged 35 to 55 years; an ideal or optimal schedule would involve screening once every three years for women aged 25 to 60 years.

Source: Dewar, Hall, and Perchalski 1992; Miller 1991

The goal of screening for cervical cancer is to diagnose and treat cervical cancer in its early, preinvasive states, when survival is close to 100% (Mandelblatt et al 1991). Therefore, knowledge of the duration of the preinvasive states is essential when determining the appropriate interval between Pap smears. For example, if preinvasive states have a duration of six to ten years, a screening program that provides a Pap smear every three to five years may be effective. However, if preinvasive states have a duration of only one to two years before advancing to invasive cancer, then annual screening may be preferred. Unfortunately, there is no consensus about the duration of preinvasive cervical cancer in women of all age groups (Mandelblatt et al 1991). Table 2 provides a summary of six reports of duration of preinvasive cervical cancer according to the age of women studied.

Table 2.--Duration of Preinvasive Cervical Cancer

Study	Age Group	Duration (yr)
Canadian Medical Association 1976	All ages	9.7-13.4
Fidler et al 1968	All ages	6.0-9.5
Peterson 1956	All ages	3.7
Barron et al 1978	All ages	3.0-10.0
Coppleson and Brown 1975	< 50	17.0
	$\geq$ 50	4.0
Kashgarian and Dunn 1970	25-35	16.0
	40-50	5.0
	> 65	1.0

The data in Table 2 from the studies of Coppleson and Brown in 1975 and Kashgarian and Dunn in 1970 suggest that special attention to the age groups of the women in the population to be screened is deserved. As women grow older, the duration of preinvasive cervical cancer decreases. Therefore, special attention may need to be devoted to the cervical cancer screening needs of elderly women.

Additional studies provide information that may be useful in determination of the optimal time interval between Pap smears. In Victoria, Australia, 13% of women diagnosed with cervical cancer during a five-year study were found to have had at least one negative Pap smear (indicating presence of no abnormal tissue) within the 36 month period prior to diagnosis (these diagnoses of cervical cancer are called "interval cancers"). The number of interval cancer diagnoses was greatest in women aged 35-69 years (compared to women under the age of 35). However, the authors reported that many of the interval cancers were due to Pap smear sampling difficulties and reporting errors rather than rapidly growing cancers (Mitchell, Medley, and Giles 1990). A five-year study in the state of Washington showed an increased risk for development of cervical cancer in women whose screening interval was three years and women whose screening interval was ten or more years (3.9 times and 12.3 times, respectively, that of women who received annual Pap smears). The researchers

suggested that in order to avoid increased risk of cervical cancer, Pap smear screening intervals should not exceed two years (Shy et al 1989). One author suggests that because screening every one or two years (as opposed to screening every three years) reduces incidence and mortality of invasive cervical cancer by less than five percent, a Pap smear interval of three years is recommended for women age 20 to about age 65 years (Eddy 1990).

In an examination of whether screening for cancer is truly necessary and effective, Meyers states that preliminary research, the results of inconclusive clinical trials, and lay-directed news stories perpetuate the myth of salvation through early detection of cancer. Meyers also states that achieving a diagnosis 3 to 12 months earlier by screening is often insufficient to alter the death rate from the cancer being studied. Meyers states that only for the prognosis for cancer of the breast (in a highly defined subpopulation of women), not for the prognosis for cervical cancer, has a change been demonstrated through early detection through screening (Meyers 1995). In the case of screening for preclinical cancer, one author offers the opinion that the will of society and new technologies have raised expectations for customary care to a much higher level and created an environment of unrealistic patient expectations (Jacobson 1989).

Purpose

The purpose of this study is to describe the process of development of a formalized system for the provision of Pap smears at General Leonard Wood Army Community Hospital and to examine the effects of the system's implementation on the number of days that a beneficiary must wait for a Pap smear appointment.

The working hypothesis is that the number of days of waiting time for delivery of a requested Pap smear is influenced by whether the request for a Pap smear was made before or after the implementation of the formalized program.

CHAPTER 2

METHOD AND PROCEDURES

The dependent variable examined was the number of days (a continuous variable) that a beneficiary (female patient) waited from the time she requested a Pap smear to the time that the patient was provided a Pap smear. The independent variable examined was group membership. This binary variable was coded as zero for patients who requested Pap smears prior to the implementation of the formalized Pap smear program (prior to January 1995) and coded as one for those patients who requested Pap smears after the implementation of the formalized Pap smear program (after January 1995).

Convenience samples of 200 patients were drawn from all patients requesting Pap smears for the six-month period prior to the implementation of the formalized Pap smear program and for the six-month period after implementation of the formalized program. Samples were not drawn from the month of the program's implementation (January 1995) in order to reduce effects not clearly attributable to presence or absence of the formalized Pap smear program.

Pap smear waiting times were quantified in days using a ratio scale (zero days wait was a possibility); therefore, validity was ensured by simply counting the number of calendar days between the date a patient made an appointment request and the date the appointment was provided. In order to gather sufficient information to describe the process used to develop a formalized Pap smear program, a variety of planning and policy implementation documents were reviewed and interviews with persons involved in the process were conducted. Each person's answers to the questions asked were compared to those of other persons in order to ensure the validity of others' responses and the reliability of the summarized description of the process used to implement the formalized Pap smear program presented in this Graduate Management Project.

No determinate information that could be used to identify individual patients is reported in this Graduate Management Project. Data was gathered using only social security numbers and appointment request and provision dates in order to track patients; however, social security numbers and appointment dates are not reported in this Graduate Management Project. The only accurate assumption that anyone may to make about the subjects is that they were female beneficiaries of the Military Health Service System. Therefore, ethical considerations have been satisfied.

CHAPTER 3

THE RESULTS

Table 3 contains the descriptive statistics derived from the sample. The correlation coefficient, r, was calculated to be -0.88. Linear regression produced the following equation for prediction of waiting days for a Pap smear appointment: Wait Time in Days = 54.10 - 45.05(Group Membership). The t (398) test statistic of 37.48 and the F (1,399) ratio of 1404.59 were statistically significant at the p = .0000 level. The statistically significant difference between mean days waiting for an appointment in the group with no formalized Pap smear program and in the group with a formalized Pap smear program indicates that group membership influences waiting time. The decreased standard deviation (almost 50%) seen in Group 1 after implementation of the solution shows that patient-to-patient variation in wait days significantly decreased after implementation of the solution (suggesting a more uniform process after implementation). The coefficient of determination, R^2, calculated to be 0.78 reveals that 78% of the variance in wait days was accounted for by variance in group membership. This indicates that the regression equation is a powerful tool for prediction of wait days.

Table 3.--Descriptive Statistics

Variable	Mean	Standard Deviation
Group Membership	0.5	0.5
Wait Days (Grand Mean)	31.57	25.55
Group 0 Wait Days	54.1	15.11
Group 1 Wait Days	9.05	7.79

Note: The Group 0 sample was drawn from all patients seeking Pap smears for the six months before implementation of the solution (n = 200). The Group 1 sample was drawn from all patients seeking Pap smears for the six months after implementation of the solution (n = 200).

CHAPTER 4

DISCUSSION

The results suggest that an organized approach to the provision of Pap smears, including an honest assessment of the supply and demand for Pap smears and modifications to physician, physician assistant, and nurse practitioner scheduling templates, can be successful in achieving satisfactory waiting times for Pap smear appointments in a military setting. Other military hospitals may find the this study and its results useful when contemplating changes in the processes used to schedule patients for and provide Pap smears. The results should not be generalized to provision of other health care services, especially those which are equipment-intensive, such as mammography services. Pap smears require little more than minor medical supply items and adequate privacy for the patient, provider, and chaperone, whereas services such as mammography require equipment that is not likely to be available in great numbers in any one hospital or health system.

Interviews and document review revealed that the following process was used to formalize the Pap smear program. Upon arrival in the summer of 1994, the Hospital Commander was

concerned with the lengthy wait time a patient was forced to accept before she could receive a Pap smear. The Hospital Commander also recognized that most Pap smears were being performed by nurse practitioners. Physicians and physician assistants were performing relatively few Pap smears. The Hospital Commander directed that a team be formed to solve the problem of excessive waiting time for Pap smears. The team identified the then-current Pap smear supply to be 4,187 per year. The team forecasted Pap smear demand to be 50% of the MHSS-eligible female population greater than sixteen years old who lived within the 40 mile catchment area (approximately 6,000 Pap smears annually). The team necessarily considered the catchment area limitation, since hospital policy stated that Pap smears were not available to those beneficiaries living outside the catchment area. Maintaining the limitation on Pap smear availability to only those beneficiaries living within the catchment area (who are the only beneficiaries for whom GLWACH receives a capitated payment for all of their health care needs) allowed the team to more accurately forecast present and future Pap smear demand. To quickly reduce the length of the waiting list, which was calculated to be 316 Pap smears in December of 1994, a "Pap smear catch-up" plan was devised. The "catch-up" plan called for the number of available Pap smear appointments to be increased on physicians' and nurse practitioners' scheduling templates in order to create an additional 126 Pap smear

appointments per month. The "catch-up" plan did not attempt to provide all 316 "backlogged" Pap smears at one time in hopes that GLWACH could avoid creating an inordinate demand for Pap smears during just one month of each year. Included in this "catch-up" plan were provisions for the additional Pap smear appointments to be apportioned between the OB/GYN Clinic and the Family Practice Clinic and for the Hospital Commander and Deputy Commander for Clinical Services to provide Pap smears in the Family Practice Clinic on "catch-up days." To prevent future development of lengthy Pap smear waiting times, the number of available Pap smear appointments was permanently increased on physicians' scheduling templates. For example, Pap smears were initiated for active duty personnel at the Troop Medical Clinic and provided by trained Physician Assistants. Additionally, the OB/GYN Clinic implemented a policy whereby the on-call physician has four Pap smear appointments available between 0800 and 0900 daily, creating twenty additional appointment times per week.

The results show that a well-planned, formalized program based upon lessons learned from past successful and failed efforts in patient scheduling can be a useful tool to achieve patient access goals. The results suggest that the standard solution of "fixing" problems by adding more health care providers to an organization may not always be the best solution.

Instead, better solutions may be derived from an assessment of what services providers currently perform and comparison to the actual services that the health care organization's mission requires. In this situation at General Leonard Wood Army Community Hospital, the realization by the Hospital Commander that physicians were not routinely performing Pap smears (the physicians preferred obstetric and gynecological cases outside the realm of preventive or routine health care) provided the impetus for a thorough assessment that resulted in a formalized program that has successfully met women's needs for cervical cancer screening.

CHAPTER 5

CONCLUSIONS AND RECOMMENDATIONS

The immediate effect of efforts applied in January 1995 in an attempt to reduce Pap smear waiting times at General Leonard Wood Army Community Hospital was to reduce mean days waiting for a Pap smear from 54.10 days to 9.05 days. The long-term effects of efforts to reduce Pap smear waiting times were to reduce future Pap smear demand by limiting availability of Pap smears to only those beneficiaries living within the hospital's catchment area and to create additional, regularly scheduled Pap smear appointments in order to forestall reoccurrence of the lengthy waiting list.

The number of Pap smears that beneficiaries would likely demand each year was forecasted by the team appointed to solve the problem of excessive waiting times. However, it was not the purpose of the team to attempt to forecast the distribution of that demand. Instead, the team assumed that once backlogged Pap smears were performed over a two to three month period, demand would be distributed such that a fairly constant number of Pap smears would be required each month. In order to better ensure that a fairly constant number of Pap smears are required each month, and therefore facilitate long-range staffing and

appointment availability plans, health care administrators should consider implementing an Army-wide policy whereby women receive Pap smears during the month of their birthday. Accomplishing important tasks during one's birthmonth is a common method used in the Army to balance the timing of demand for services and to serve as a reminder to soldiers that the important tasks must be accomplished. For example, soldiers receive periodic physical examinations, biennial HIV testing, annual dental examinations, and annual personnel records updates during their birthmonth. Extending this policy to Pap smear screening for active duty and non-active duty beneficiaries would create more predictable demand for Pap smears and serve to better remind beneficiaries that they are due for a Pap smear. Birthmonth Pap smear screening would also serve to satisfy one of the eight essential characteristics of an organized cervical cancer screening program espoused by Hakama et al in 1985: measures should be available to guarantee high coverage and attendance.

The eight desirable characteristics of an organized cervical cancer screening program proposed by Hakama et al (1985) also serve as the basis for the final recommendation offered in this Graduate Management Project. Currently, no one person or office is responsible for ensuring that the program serves all those beneficiaries who need Pap smears and that the Pap smear itself, pathology work, and any required follow-up is of the highest

possible quality. Health care administrators should consider designating an individual or team as responsible for evaluation and monitoring of the overall program. The responsible person or team could be designated as the "Women's Health Representative" and also be responsible for evaluation and monitoring of other vital women's health issues such as mammogram programs.

WORKS CITED

ACOG Committee. 1993. Routine cancer screening: ACOG committee opinion: committee on gynecologic practice. *International Journal of Gynecology and Obstetrics* 43:344-8.

Barron, B.A., Cahill, M.C., and R.M. Richart. 1978. A statistical model of the natural history of cervical neoplastic disease: the duration of carcinoma in situ. *Gynecological Oncology* 6:196-205.

Barter, J.F. 1992. The life and contributions of Doctor George Nicholas Papanicolaou. *Surgery* 174:530-2.

Beral, V., Hermon, C., Munoz, N., and S.S. Devesa. 1994. Cervical cancer. *Cancer Surveys* 19/20: 265-85.

Berrino, F. 1990. Cervical cancer. In *Elimination or reduction of Diseases?*, ed. A.T. Silman and S.P. Allwright. Oxford: Oxford University Press.

Canadian Medical Association. 1976. Canadian Medical Association cervical cancer screening programs. *Canadian Medical Association Journal* 114:1003-33.

Chu, K.C., Kramer, B.S., and C.R. Smart. 1991. Analysis of the role of cancer prevention and control measures in reducing cancer mortality. *Journal of the National Cancer Institute* 83:1636-43.

Coppleson, L.W., and B.W. Brown. 1975. Observation on a model of the biology of carcinoma of the cervix: a poor fit between observation and theory. *American Journal of Obstetrics and Gynecology* 122:127-36.

Davis, K. 1995. Editorial: the federal budget and women's health. *American Journal of Public Health* 85:1051-3.

Department of Defense. 1995. Health Services Region VIII Regional Health Services Plan.

Dewar, M.A., Hall, K., and J. Perchalski. 1992. Cervical cancer screening: past success and future challenge. Primary Care 19:589-606.

Di Saia, P.J. and W.C. Creasman. 1989. *Clinical Gynecologic Oncology*. St. Louis: C.V. Mosby.

Eddy, D.M. 1990. Screening for cervical cancer. *Annals of Internal Medicine* 113:214-26.

Federal Register. 1994. Civilian Health and Medical Program of the Uniformed Services (CHAMPUS); coverage of screening mammography and Papanicolaou (PAP) tests, certified marriage therapists, and requirements for coverage and reimbursement of services of physicians in teachings settings. Rules and Regulations 59(35):8401-08.

Fidler, H.K., Boyes, D.A., and A.J. Worth. 1968. Cervical cancer detection in British Colombia. *Journal of Obstetrics and Gynaecology of the British Commonwealth* 75:392-404.

Gillam, S.J. 1991. Understanding the uptake of cervical cancer screening: the contribution of the health belief model. *British Journal of General Practice* 41:510-3.

Griffith, R.S. and P.A. Williams. 1992. Barriers and incentives of physicians and patients to cancer screening. *Primary Care* 19:535-56.

Guzick, D.S. 1978. Efficacy of screening for cervical cancer: a review. *American Journal of Public Health* 68:125-34.

Hakama, M., Chamberlain, J., Day, N.E., Miller, A.B., and P.C. Prorok. 1985. Evaluation of screening programmes for gynaecological cancer. *British Journal of Cancer* 52:669-73.

Jacobson, P.D. 1989. Medical malpractice and the tort system. *JAMA* 262:3320-7.

Johannesson, G., Geirsson, G., and N. Day. 1978. The effect of mass screening in Iceland, 1965-74, on the incidence and mortality of cervical carcinoma. *International Journal of Cancer* 21:418-25.

Kashgarian, M. and J.E. Dunn. 1970. The duration of intraepithelial and preclinical squamous cell carcinoma of the uterine cervix. *American Journal of Epidemiology* 92:211-22.

Kerr, J. 1995. Cervical cancer: improving the service. *Nursing Standard* 9:26-9.

Mandelblatt, J., Schechter, C., Fahs, M., and C. Muller. 1991. Clinical implications of screening for cervical cancer under Medicare. *American Journal of Obstetrics and Gynecology* 164:644-51.

McPhee, S.J. 1995. Screening for cancer: useful despite its limitations. *Western Journal of Medicine* 163:169-72.

Meyers, F.J. 1995. Screening for cancer: is it worth it? *Western Journal* of Medicine 163:166-8.

Miller, A.B. 1991. Role of early diagnosis and screening: biomarkers. *Cancer Detection and Prevention* 15:21-6.

Mitchell, H., Medley G., and G. Giles. 1990. Cervical cancer diagnosed after negative results on cervical cytology: perspectives in the 1980s. *British Medical Journal* 300:1622-6.

Papanicolaou, G.N. 1928. New cancer diagnosis. *Proceedings of the Third Race Betterment Conference*, January 2-6, 1928:528-34.

Papanicolaou, G.N. and H.F. Traut. 1941. The diagnostic value of vaginal smears in carcinoma of the uterus. *American Journal of Obstetrics and Gynecology* 42:193-206.

Peterson, O. 1956. Spontaneous course of cervical precancerous conditions. *American Journal of Obstetrics and Gynecology* 72:1063-71.

Shy, K., Chu, J., Mandelson, M., Greer, B., and D. Figge. 1989. Papanicolaou smear screening interval and risk of cervical cancer. *Obstetrics & Gynecology* 74:838:43.

Ward, J.E., Gordon, J., and R.W. Sanson-Fisher. 1991. Strategies to increase preventive care in general practice. *Medical Journal of Australia* 154:523, 526-31.

Williams, P.A. and M. Williams. 1988. Barriers and incentives for primary care physicians in cancer prevention and detection. *Cancer* 61:2382-90.

Wingo, P.A., Tong, T., and S. Bolden. 1995. Cancer statistics, 1995. *A Cancer Journal for Clinicians* 45:8-30.